

What is claimed is:

1. A method for manufacturing a light emitting device comprising at least one layer of a p-type compound semiconductor layer on an active layer where light is generated and a p-type electrode on the p-type compound semiconductor layer, the method comprising:

forming the p-type compound semiconductor layer on the active layer and annealing twice the resultant structure; and

forming the p-type electrode on the annealed p-type compound semiconductor layer.

2. The method of claim 1, wherein annealing twice the resultant structure comprises:

performing first annealing on the resultant structure in a nitrogen atmosphere after the p-type compound semiconductor layer is formed; and

performing second annealing on the first annealed resultant structure in an oxygen atmosphere.

3. The method of claim 2, wherein the first annealing is performed at an atmospheric pressure at a temperature of 300-1000°C for a duration from 30 seconds to 3 hours.

4. The method of claim 2, wherein the second annealing is performed at an atmospheric pressure at a temperature of 300-1000°C for a duration from 30 seconds to 3 hours.

5. The method of claim 1, wherein the p-type electrode is formed as a single layer or a multi-layer.

6. The method of claim 5, wherein the single layer is formed of a Pd layer, a Ni layer, a Pt layer, or an Au layer.

7. The method of claim 5, wherein the multi-layer is formed of at least two layers selected from the group consisting of a Pd layer, a Ni layer, a Pt layer, and an Au layer.

8. The method of claim 1, wherein the p-type compound semiconductor layer is formed of a p-GaN layer.

5 9. The method of claim 1, wherein the p-type compound semiconductor layer is formed as a multi-layer, and the uppermost layer of the p-type compound semiconductor layer that contacts the p-type electrode is formed of a p-GaN layer.

10 10. The method of claim 2, wherein the p-type electrode is formed as a single layer or a multi-layer.

11. The method of claim 2, wherein the p-type compound semiconductor layer is formed of a p-GaN layer.

15 12. The method of claim 2, wherein the p-type compound semiconductor layer is formed as a multi-layer, and the uppermost layer of the p-type compound semiconductor layer that contacts the p-type electrode is formed of a p-GaN layer.

20 13. A method for manufacturing a light emitting device, the method comprising:

forming at least one layer of n-type compound semiconductor layer on a substrate;

forming an active layer on the n-type compound semiconductor layer, the active layer where light is generated;

25 forming at least one layer of p-type compound semiconductor layer on the active layer;

annealing twice the resultant structure including the p-type compound semiconductor layer;

30 forming a p-type electrode on the p-type compound semiconductor layer; and forming an n-type electrode to contact the n-type compound semiconductor layer.

14. The method of claim 13, wherein annealing twice the resultant structure comprises:

performing first annealing on the resultant structure in a nitrogen atmosphere;
and
performing second annealing on the first annealed resultant structure in an
oxygen atmosphere.

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15. The method of claim 14, wherein the first annealing is performed at an
atmospheric pressure at a temperature of 300-1000°C for a duration from 30
seconds to 3 hours.

10 16. The method of claim 14, wherein the second annealing is performed at
an atmospheric pressure at a temperature of 300-1000°C for a duration from 30
seconds to 3 hours.

15 17. The method of claim 13, wherein the p-type electrode is formed as a
single layer or a multi-layer.

18. The method of claim 17, wherein the single layer is formed of a Pd
layer, a Ni layer, a Pt layer, or an Au layer.

20 19. The method of claim 17, wherein the multi-layer is formed of at least
two layers selected from the group consisting of a Pd layer, a Ni layer, a Pt layer,
and an Au layer.

25 20. The method of claim 13, wherein the p-type compound semiconductor
layer is formed of a p-GaN layer.

21. The method of claim 13, wherein the p-type compound semiconductor
layer is formed as a multi-layer, and the uppermost layer of the p-type compound
semiconductor layer that contacts the p-type electrode is formed of a p-GaN layer.

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22. The method of claim 14, wherein the p-type electrode is formed as a
single layer or a multi-layer.

23. The method of claim 14, wherein the p-type compound semiconductor layer is formed of a p-GaN layer.

24. The method of claim 14, wherein the p-type compound semiconductor layer is formed as a multi-layer, and the uppermost layer of the p-type compound semiconductor layer that contacts the p-type electrode is formed of a p-GaN layer.